CIRC ACCESSION NO--AP0112543   UNCLASSIFIED   PROCESSING DATE--02OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NEPHELOMETRIC STUDIES HAVE BEEN
CARRIED OUT IN AQUEOUS SODIUM OLEATE SOLUTIONS IN THE CONCENTRATION
RANGE 1.25-15 G-100 ML OVER THE TEMPERATURE RANGE 20-60DEGREES. AT A
DEFINITE CONCENTRATION OF SOAP SOLUTION SPHERICAL MECELLES CHANGE INTO
LAMELLAR. WITH RISING TEMPERATURE, LAMELLAR MICELLES BREAK DOWN TO
SPHERICAL AND THE AGGREGATION DEGREE OF SPHERICAL MECELLES SOMEWHAT
DIMINISHES. SOLUBILIZATION OF HYDROCARBONS BRINGS ABOUT BREAKING UP OF
LAMELLAR MICELLES INTO SPHEROIDAL AND REORGANIZATION OF SPHERICAL
MICELLES WITH INCREASE OF THEIR AGGREGATION DEGREE. .

UNCLASSIFIED

USSR

CHIPULIS, V. P.

"Construction of Full Diagnostic Tests for Combination Systems"

Izv. Leningr. Elektrotekhn. In-ta. [Works of Leningrad Institute of Electric Engineering], 1972, No 118, Part 1, pp 133-137 (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V447 by Kh. Madatyan).

Translation: A method is presented of constructing full diagnostic tests for combination systems. The method suggested does not allow the length of the test to be estimated.

1/1

UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--EXPERIMENTAL STUDY OF THE ELECTRICAL CONDUCTIVITY OF A
NONEQUILIBRIUM HELIUM POTASSIUM PLASMA -U-
AUTHOR-(02)-BATENIN, V.M., CHINNOV, V.F.

COUNTRY OF INFO--USSR

SOURCE--TEPLOFIZ. VYS. TEMP. 1970, 8(2), 441-2

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ELECTRICAL CONDUCTIVITY, POTASSIUM, HELIUM PLASMA, PLASMA
CONDUCTIVITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/1406   STEP NO--UR/0294/70/008/002/0441/0442

CIRC ACCESSION NO--AP0133358
UNCLASSIFIED

CIRC ACCESSION NO--AP0133358

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ELEC. COND. OF THE HE-K MIXT. WAS MEASURED AT ATM. PRESSURE, AND THE CALCD. VALUE OF THE KINETIC COEFF. K SUBSIGMA, WAS CHECKED EXPTL. THE D.C. ARC DISCHARGE WAS 100 MM LONG, AND K AMOUNT WAS (0.6-4) TIMES 10 PRIMENEGATIVE2PERCENT. PLOTS ARE SHOWN FOR THE DEPENDENCE OF THE ELEC. FIELD, GAS TEMP. T SUBA (MEASURED WITH W-RE THERMOCOUPLES), AND ELECTRON TEMP. T SUBE (MEASURED BY THE RECOMBINATION RADIATION INTENSITY) AS FUNCTIONS OF CURRENT (LESS THAN OR EQUAL TO 7 A). THE RADIAL DISTRIBUTION OF THE ELECTRON CONCN., T SUBE, AND T SUBA ARE SHOWN.   FACILITY: INST. VYS. TEMP., MOSCOW, USSR.

UNCLASSIFIED

5

USSR   UDC 616.981.455-036.21(571.62)

BUSOYEDOVA, N. M., ANTIP'YEVA, O. A., LIPAYEV, V. M., KOZLOVSKAYA, O. L.,
CHERNYKH, P. A., FEOKISTOV, A. Z., GRIGOROV, V. I., CHIP~~~~~, V. L., and
KHAMAGANOV, S. A., Khabarovsk Antiplague Station

"Characteristics of Natural Foci of Tularemia in Khabarovskiy Kray"

Abstract: A study conducted in the southern part of Khabarovskiy Kray
indicated that natural foci of tularemia in forested and agricultural areas
are different from those found in other parts of the USSR, because Arvicola
terrestris and the common vole (Microtus arvalis) are absent, and hares and
house mice are not numerous. Muskrats were found at only one focus. In
forested regions the principal host is the large-toothed redbacked vole (Cle-
thrionomys rufocanus), while the long-time reservoir and vectors are I. per-
sulcatus and H. concinna ticks. Forest and field mice and the Siberian chip-
munk were also infected. In agricultural regions the hosts are the northern
redbacked and Far-Eastern vole (Clethrionomys rutilis; Microtus fortis), while
D. silvarum and H. concinna ticks constitute the reservoir and vectors. A
low epizootic level and still lower epidemic activity were typical for
1/2

USSR

tularemia foci in Khabarovskiy Kray in the vicinity of the Amur River. The
low rate of infection of human beings was due to the absence or small numbers
of classical hosts (Arvicola terrestris, common vole, and hares) with which
human beings may come into contact, the absence of active and widespread
epizootics, and the predominance in agricultural areas of a rodent of the
secondary host group (field mouse). Of seven cases of tularemia recorded,
five were of the bubonic form. In one instance the source of infection was
water containing P. tularensis, and in another instance the infection was
apparently due to introduction of the agent into an eye by hands soiled with
rodent feces. Testing of the population at known tularemia foci with tularin
resulted in a positive allergic reaction in 1.2-2.5% of cases. The agglu-
tination reaction was positive in 2.5-5.8%, and the passive hemagglutination
reaction in 3.3-9.7% of cases. The data reported were obtained in an investi-
gation conducted during 1956-1968.

2/2

USSR

UDC 548.74

AGAYEV, K. A., GASYMOV, V. A., CHIRAGOV, M. I., Institute of Inorganic and Physical Chemistry, Academy of Sciences Azerbaydzhan SSR

"Electronographic Determination of Structure of InTlS$_2$ Thin Films"

Abstract: The method of electron diffraction is used to study the structure of thin InTlS$_2$ films. It is determined that they have a hexagonal lattice with unit cell periods: a = 3.81 ± 0.01, c = 14.91 ± 0.02 A. It is established that the Tl occupies positions 1(a) and 1(d), the In -- 2(i), the S -- 2(h) and 2(g) in rt. gr. P$\bar{6}$m2 with coordinates z_{in} = 0.250, z_{S_1} = 0.167, z_{S_2} = 0.333; the unreliability factor R_{hkl} = 0.114. The structure of InTlS$_2$ is similar to the structure of molybdenite MoS$_2$ with the difference that in the case of InTlS$_2$, the octahedrons between the trigonal prisms are filled with trivalent indium.

1/1

TITLE--RADIOLYSIS OF 1,HEXADECANE AND 1,OCTADECANETHIOLS -U-

AUTHOR-(03)-CHIRAKADZE, G.G., NANOBASHVILI, YE.M., MOSASHVILI, G.A.

COUNTRY OF INFO--USSR

SOURCE--SOOBSHCH. AKAD. NAUK BRUZ. SSR 1970, 57(2), 341-4

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--RADIOLYSIS, DECANE, THIOL, X RAY, GAMMA RADIATION, SULFIDE,
  SULFONIC ACID

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/0797   STEP NO--UR/0251/70/057/002/0341/0344

CIRC ACCESSION NO--AP0136231
                              UNCLASSIFIED

2/2   020   UNCLASSIFIED   PROCESSING DATE--04DEC70
CIRC ACCESSION NO--AP0136231
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE COMPDS., (I) AND (II),
RESP., WERE EXPOSED TO X AND GAMMA RAYS.   I HAVING RECIEVED A DOSE OF
2.2 TIMES 10 PRIME19 OR 3.6 TIEMS 10 PRIME19 EV-ML SHOWED A CONVERSION
YIELD OF 0.4 TIMES 10 PRIME NEGATIVE3 OR 0.8 TIMES 10 PRIME NEGATIVE3
MOLE-L., RESP.   I DISSOLVED IN ORG. SOLVENTS WAS CONSIDERABLY MORE
SENSITIVE TO CHANGES, THE EXTENT BEING A FUNCTION OF SOLVENT POLARITY:
A 0.008M SOLN. IN ETOH HAVING RECEIVED A DOSE OF 0.9 TIMES 10 PRIME19 OR
3.6 TIMES 10 PRIME19 EV-ML SHOWED A DECOMPN. OF 0.75 TIMES 10 PRIME
NEGATIVE3 OR 2 TIMES 10 PRIME NEGATIVE3 I MOLE-L., AND A 0.008M SOLN. IN
ISOOCTANE UNDER THE SAME CONDITIONS, 0.49 TIMES 10 PRIME NEGATIVE3 OR
1.2 TIMES 10 PRIME NEGATIVE3 I MOLE-L., RESP. DOUBLING THE CONCN. OF I
NEGLIGIBLY RAISED THE CONVERSION OF I. II BEHAVED SIMILARLY WHEN TESTED
UNDER SIMILAR CONDITIONS. THE MAIN CONVERSION PRODUCTS WERE THE
CORRESPONDING DISULFIDES (SULFIDES, SULFONIC ACIDS, AND H SUB2 S WERE
FORMED ONLY IN MINOR AMTS.). THE COMPARISON OF THESE DATA WITH THOSE
FOR LOWER MOL. WT. HOMOLOGS SHOWS THAT THE EFFECTS OF MOL. WT.
DIMINISHES SHARPLY STARTING WITH I AND THE HIGHER THIOLS RESEMBLE
RADIATION STABLE HYDROCARBONS IN MANY RESPECTS.   FACILITY: INST.
NEORG. KHIM. ELEKTROKHIM., TBILSI, USSR.

UNCLASSIFIED

USSR

UDC: 624.04:539.374

CHIRAS, A. A. (Vil'nyus)

"Theory of the Optimization of an Elastoplastic Solid With Repetitive
Variable Loading"

Moscow, Stroitel'naya Mekhanika i Raschet Sooruzheniy, No 1, 1972, pp 1-6

Abstract: The aim of the article is to formulate and to construct mathemati-
cal models for the general problem of calculation (including also the purpose
of optimization) of an ideally elastoplastic solid under the action of a
previously stipulated repetitive variable load. For this purpose, the basic
extremal energy principles are formulated on the basis of flow theory; it is
shown, which parameters can be varied freely for what given type of problems
and on the basis of these principles mathematical models are constructed in
the form of dual problem pairs of mathematical programming. The first of
these problems is formulated as follows: for a known structure, it is required
to determine the limits of load change (the point of application and the
direction of their action being given), at which cyclical plastic failure
takes place, and the load itself will correspond to a specific quality indi-
cator. The second problem: for a given repetitive variable load (including
overload coefficients) it is required, from the condition of cyclical plastic

1/3

- 116 -

USSR

failure, to determine the structural parameters which would correspond to a
specific indicator of its quality. Henceforth the first problem is a control
problem, and the second a design problem. The aim of limit analysis with
single loading is to determine the limit loads (or the structural parameters)
when, and only when, the state of simple plastic failure is reached. The
latter problem could also be solved for the case of single loading, but the
entire course of loading would have to be investigated. The same must take
place also in the case of repetitive variable loading. The question of the
greatest practical interest is the determination of the load limits (or the
structural parameters) which specifically bring about plastic failure, and
not those which precede this state. With such a formulation, the program of
loading is set aside; this greatly simplifies the analysis itself and makes
it accessible in the solution of a wide class of problems both in a physical
linear formulation and in a nonlinear formulation. The computation methods
of mathematical programming and electronic computer equipment permit the
successful solution of such problems. Thus, the authors feel that the basic
theorems of the theory of cyclical plastic failure must be called those
extremal energy principles, on the basis of which the mathematical models of

2/3

USSR

CHIRAS, A. A., Stroitel'naya Mekhanika i Raschet Sooruzheviy, No 1, 1972,
pp 1-6

control and direct calculation are constructed. On the basis of extremal
energy principles of the minimum of the rate of dissipation of energy and
the maximum problem of the external load in a cycle, mathematical models are
constructed for problems of optimization of an ideal elastoplastic medium in
a state of cyclical plastic failure. 8 references.

3/3

AP9052902

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UR 0289

E. N. Shmidt, V. Beneshova,
M. A. Chircova, V. A. Pentegova

THE CHEMISTRY OF THE GENUS PICEA
PART 1. DITERPENOID COMPOUNDS FROM OLEORESIN
OF PICEA AJANENSIS F.

High-boiling neutral part from oleoresin of Picea ajanensis have been investigated.
The following compounds were isolated: cembrene, isofillocladene, -fillocladene, epima-
noyloxide, manool, epimanool, isoabienol, fillocladanol and its epimer. Tetracyclic diter-
penoids predominate in the neutral fraction of the oleoresin of Picea ajanensis Fisch.

1949   1597

7

TITLE--A STUDY OF ANTIGENS OF THE SURFACES OF CELLS OF LARYNGEAL PAPILLOMA
-U-

AUTHOR-(03)-ILIN, K.V., SPURE, ZH.ZH., CHIRESHKIN, D.G.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BILOGII I MEDITSINY, 1970, VOL 69, NR
5, PP 85-88

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ANTIGEN ANTIBODY REACTION, RESPIRATORY SYSTEM, FLUORESCENT
ANTIBODY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0092   STEP NO--UR/0219/70/069/005/0085/0088

CIRC ACCESSION NO--AP0120792
                        UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120792
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CELLS OF LARYNGEAL PAPILLOMA
OF CHILDREN CONTAIN A SPECIFIC SURFACE ANTIGEN (OR ANTIGENS) REVEALED BY
THE INDIRECT METHOD OF FLUORESCING ANTIBODIES. HUMORAL ANTIBODIES TO
THIS ANTIGEN EXERT A CYTOTOXIC EFFECT ON THE CELLS OF PAPILLOMA.
FACILITY: GAMALEIA INSTITUTE OF PEIDEMIOLOGY AND MICROBIOLOGY OF THE
ACADEMY OF MEDICAL SCIENCES, OF THE USSR AND NO. 2 CITY PEDIATRIC
CLINICAL HOSPITAL, MOSCOW.

UNCLASSIFIED

USSR   UDC 629.78.015:533.6.011.55.011.6

CHIRIKHIN, A. V.

"Method of Calculating Freezing Point of a Nitrogen Stream in a Hypersonic
Nozzle"

Translation: An engineering method is suggested for calculating the freezing
temperature of oscillations as nitrogen flows through a hypersonic nozzle
which refines the Finney criterion in the light of the latest data on relaxa-
tion time and the results of precise calculations of non-equilibrium flows.
The error of calculation by this method averages less than two percent.
2 Figures, 7 Biblio. Refs.

1/1

- 53 -

TITLE--SEPARATION OF AN ISOBUTANE ISOBUTYLENE MIXTURE -U-

AUTHOR-(04)-GALATA, L.A., VLASOV, L.V., KOFMAN, L.S., CHIRIKOVA, Z.P.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 202,909
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--09MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--DISTILLATION, BUTANE, BUTENE, CHEMICAL PATENT, CHEMICAL
    SEPARATION, ALIPHATIC AMINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/1777   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0137017
                            UNCLASSIFIED

CIRC ACCESSION NO--AA0137017
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MIXT. OF ISOBUTANE AND
  ISOBUTYLENE IS SEPD. BY RECTIFICATION IN THE PRESENCE OF MONO OR
  DIMETHYLAMINE AS A SEPG. AGENT.

UNCLASSIFIED

USSR   UDC: 621.373

GRISHIN, Yu. P., NOVOSEL'TSEVA, T. Ya., TOLOKONNIKOV, S. V., CHIRITSO, R. L.,
YURCHENKO, Yu. S.

"A Precision Delayed-Pulse Oscillator"

V sb. Obmen opytom v radiopromyshlennosti (Experience Pooling in the Radio
Industry--collection of works), Vyp. 6, Moscow, 1970, pp 63-67 (from RZh-
-Radiotekhnika, No 11, Nov 70, Abstract No 11A332)

Translation: Multichannel delay circuits with interpolation scale made in
the form of a digital phase shifter are used for constructing a digital
delayed pulse oscillator. A delay setting discreteness of 10 nsec is at-
tained. Individual descriptions are given of the cadence pulse generator
and the digital phase shifter as the elements which are of the greatest
interest. E. L.

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USSR   UDC 591.1.15

CHIRKIN, A. A., and KOZIN V. M.

"The Effect of Ultrasound on the Activity of Fructose-1-Phosphate Aldolase in the Liver, Blood Plasma and Hemolysates of the Erythrocytes of White Rats"

Nauch. dokl. vyssh. shkoly. Biol. n. (Scientific Report of the University Biological Sciences), No 2, 1972, pp 46-50 (from Referativnyy Zhurnal -- Biologicheskaya Khimiya, No 11, 1972, Abstract No 11F1608)

Translation: The activity of fructose-1-phosphate aldolase in the liver, blood plasma and hemolysates was studied under the influence of ultrasound in a wide range of intensities (0.2-1.8 watt/cm^2). It was determined that ultrasonic vibrations of relatively low power induce a decrease in enzyme activity in the liver and erythrocytes and also increase the permeability of the liver cell membranes. (Author abstract).

1/1

USSR

CHIRKIN, A. A., and KOZIN, V. M.

"Effect of Ultrasonic Vibrations on Aldolase and Lactate Dehydrogenase
Activity in Certain Rat Tissues"

Nauchn. dokl. vyssh. shkoly. Biol. n. (Scientific Reports of Schools of
Higher Education: Biological Sciences), 1970, No 9, pp 43-48 (from REh-
Biologicheskaya Khimiya, No 2, 25 Jan 71, Abstract No 2F1322 from summary)

Translation: The authors studied the effect of ultrasonic vibrations with a
frequency of 830 cps in a wide range of intensities (0.2, 0.6 and 1.8 watts
per sq cm) on the dynamics of the variations of aldolase and lactate dehydro-
genase in the skin, muscles, liver, intestine, kidneys and blood serum of
white rats. It was established that with a single exposure to ultrasonic
waves the activity of these enzymes, mainly lactate dehydrogenase, increases
in a number of the animals' organs. With fivefold repetition of exposure to
ultrasound with an intensity of 1.8 watts per sq cm, partial inactivation of
the enzymes in the tissues and intensified escape thereof into the vascular
bed usually take place. Variations in the activity of tissue enzymes depend
on the depth at which the organ is situated (rather than its orientation)
relative to the ultrasonic radiator.
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USSR   UDC 534-8:577.15:599.323.4

CHIRKIN, A. A., and KOZIN, V. M., Chair of Dermatological and Venereal Diseases,
Vitebsk Medical Institute

"Effect of Ultrasound on Aldolase and Lactate Dehydrogenase Activity in Certain
Rat Tissues"

Abstract: Ultrasound at a frequency of 830 KHZ and at intensities ranging from
0.2 to 1.8 w/cm^2 altered the activity of aldolase and lactate dehydrogenase in the
skin, muscles, liver, small intestine, kidneys, and serum of rats. For example,
a single exposure increased the activity of the enzymes, especially lactate de-
hydrogenase, in the skin, muscle, and kidneys while decreasing it in the other
organs. Repeated exposures (5) increased aldolase activity in the skin and kidneys
but decreased lactate dehydrogenase activity in the same organs. In muscles, low-
and medium intensity ultrasound stimulated lactate dehydrogenase activity but
partly inactivated aldolase activity. The organs were affected by ultrasound in
the following order of magnitude of change: skin > muscles > kidneys > liver >
small intestine. The effect thus varied according to the depth of the organ in
relation to the vibrator head (with the exception of kidneys, which, although
farthest removed from the vibrator, were affected by ultrasonic waves reflected
from the dorsal surface of the skin).
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1/2   034   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--ULTRASONIC VIBRATIONS EFFECT ON TRANSAMINASES ACTIVITY IN RAT
    ORGANS -U-
AUTHOR-(02)-CHIRKIN, A.A., KOZIN, V.M.

COUNTRY OF INFO--USSR

SOURCE--VOPROSY MEDITSINSKOY KHIMII, 1970, VOL 16, NR 3, PP 274-276

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TRANSAMINASE, WHITE RAT, ENZYME ACTIVITY, ULTRASONIC BIOLOGIC
    EFFECT, BIOLOGIC VIBRATION EFFECT, ALANINE, SKIN, LIVER, KIDNEY, BLOOD
    SERUM, DIGESTIVE SYSTEM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0264   STEP NO--UR/0301/70/016/003/0274/0276

CIRC ACCESSION NO--AP0120954
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0120954
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF ULTRASONIC
   VIBRATIONS 830 KC OF FREQUENCY AT A WIDE RANGE OF INTENSITIES (0.2, 0.6
   AND 1.8 W-CM PRIME2) ON ACTIVITIES OF ALANINE AMINOTRANSFERASE AND
   ASPARTATE AMINOTRANSFERACE IN THE SKIN, MUSCLES, LIVER, INTESTINE,
   KIDNEY AND BLOOD SERUM OF WHITE RATS HAVE BEEN STUDIED. THE STIMULATORY
   ACTION OF VIBRATIONS ON THE ACTIVITY OF FIRST ENZYME AND ITS INHIBITORY
   ACTION ON THE ACTIVITY OF THE SECOND WAS FOUND.   FACILITY:
   CENTRAL RESEARCH LABORATORY AND CHAIR OF SKIN AND VENERAL DISEASES,
   MEDICAL INSTITUTE, VITEBSK.

UNCLASSIFIED

USSR   UDC 612.015.11:577.158.45].014.45

CHIRKIN, A. A. and KOZIN, V. M., Central Scientific Research Laboratory, and Chair of Skin and Venereal Disease, Vitebsk Medical Institute

"The Effect of Ultrasound on Transaminase Activity in White Rats"

Moscow, Voprosy Meditsinskoy Khimii, No 3, 1970, pp 274-276

Abstract: Exposure of rats to ultrasonic vibrations (0.2, 0.6, and 1.8 w/cm^2) activated alanine aminotransferase mainly in the organs in direct contact with the head of the vibrator (skin and muscles), but inhibited aspartate aminotransferase activity in the deeper tissues and organs (liver, kidney, intestine). Both enzymes were particularly sensitive to the intensity of 0.6 w/cm^2. Changes in the serum enzymes paralleled those in the tissue transaminases, except that two hours after repeated sonication, serum aspartate aminotransferase activity significantly increased at all intensities. At the same time, the activity of the enzyme in the tissues either decreased or remained unchanged. This suggests that ultrasonic vibrations affect the permeability of cell membranes.

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USSR

UDC: 621.375.82

ARUTYUNYAN, A. G., TUNKIN, V. G., and CHIRKIN, A. S.

"Light-Power Interferometer with High Resolution for Measuring Spatial Coherence of Optical Radiation"

Moscow, V sb. Kvant. elektronika (Quantum Electronics--collection of works) "Sov. radio," No 1(13), 1973, pp 111-113 (from RZh--Fizika, No 7, 1973, Abstract No 7D1069)

Translation: The design of an interferometer constructed to measure small radii of spatial coherence of light radiation, which has a number of advantages over the Young and Mach-Zehnder interferometers used for the same purpose, is described. Results are given of measurements using the described interferometer for the space correlation function of helium-neon laser radiations and aluminum-yttrium garnet laser oscillations. These latter oscillations had a coherence radius of ~0.1 mm in the oscillation of many transverse modes for a beam radius of 5 mm. Authors' abstract

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USSR   UDC: 621.373:530.145.6

TOMOV, I. V., CHIRKIN, A. S.

"On the Effectiveness of Generation of High-Order Optical Harmonics and Multiple-Quantum Processes in a Multimode Emission Field"

V sb. Kvant. elektronika (Quantum Electronics--collection of works), No 1, Moscow, 1971, pp 110-115 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5D176)

Translation: The authors analyze the generation of harmonics and multiple--quantum processes above second-order in a field of laser emission with various phase mode statistics. General relationships are derived which can be used to calculate the efficiency η_k of the nonlinear process of any k-th order for an arbitrary number of both synchronized and unsynchronized modes. It is shown that mode synchronization substantially increases the value of η_k. Exact values are given for η_k in the case of synchronized modes for third and fourth order processes, and in the case of synchronized modes -- up to sixth order processes inclusive. Bibliography of 16 titles. Resumé.

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USSR   ·   ·   UDC 621.375.82

TOMOV, I. V., CHIRKIN, A. S.

"On the Effectiveness of the Generation of Optical Harmonics of High Order and Multiquanta Processes in a Multimode Radiation Field"

V sb. Kvant. elektronika (Quantum Electronics), No. 1, Moscow, 1971, pp 110-115 (from RZh-Fizika, No 7, Jul 71, Abstract No 7D995)

Translation: The generation of harmonics and multiquanta processes above the second order in a laser radiation field with various statistics for the mode phases were analyzed in the assigned field approximation and in the absence of saturation. General relationships are derived for calculating the effectiveness η_k of a nonlinear process of any k-th order for an arbitrary number of both synchronized and unsynchronized modes. It was shown that synchronization of modes considerably increases the value of η_k. Exact values of η_k are given for the case of synchronized modes for processes of the third and fourth orders and for unsynchronized modes up to processes of the sixth order. 16 ref. Authors abstract.

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Acc. Nr:АР0038060   C   Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, 1970, Vol 58, Nr 1, pp 191-198

STATISTICS OF PHOTO-COUNTS OF NONLINEARLY TRANSFORMED LIGHT

Tunkin, V. G.; Chirkin, A. S.

Results are presented of a theoretical investigation of the statistical properties of the second optical harmonic produced in a homogeneous nonlinear crystal. Expressions are obtained for the intensity and counting distribution of the harmonic excited by laser and thermal radiation. Quasistatic and nonstationary excitation conditions are considered. The effect of incomplete spatial coherence of the fundamental frequency on the statistical properties of the second harmonic is analyzed. It is found, in particular, that the temporal statistical properties of the harmonic may significantly depend on spatial coherence of the fundamental radiation. In order to characterize the counting distribution a parameter is introduced which is related only to the relative fluctuations of the radiation intensity.

REEL/FRAME
1971 31105

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GB

USSR

KARPOV, YU. S., LOTCTSKIY, B. YU., CKUNEV, YU. T., PASYNKOV, V.V., CHIRKIN, L.K.

"Varistors"

V sb. Poluprovodn. pribory i ikh primeneniye (Semiconductor Devices And Their Application--Collection Of Works). No 23, Moscow, "Sov. radio," 1970, pp 305-317 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11B265)

Translation: The mechanism of varistor action is considered, and the basic parameters and characteristics of varistors of domestic manufacture are presented, as well as the results of computation of certain characteristics of varistors, assuming that heating of the point contacts is a basic effect leading to nonlinearity of the current-voltage characteristic in the operating range of the change of currents and voltages. It is shown that by introducing an impurity with a different ionization energy into silicon carbide, it is possible to change within wide limits the value of the coefficient of nonlinearity of the current-voltage characteristic. The results are presented of investigations of the noise properties of varistors;and the dependence of the noise factor on the operating conditions of varistors and the temperature of the environment. 7 ill. 1 tab. 5 ref. Summary.

1/1

USSR

UDC: 621.372.8

VLASOV, A. B., SPIRIN, V. A., CHIRKIN, N. M.

"Wide-Band Excitation of Hypersound by Quasistatic Decelerating Systems"

Abstract: The paper analyzes the possibilities of using quasistatic de-
celerating systems for excitation of hypersound in an acoustic line made
up of a set of piezoelectric crystals, each crystal being excited by the
corresponding cell of the decelerating system. It is shown that the band
filter and low-frequency filter types of decelerating systems can be used
for excitation of hypersonic oscillations in a "discrete" acoustic line,
and that wide-band delay lines can be made on this basis.

1/1

USSR   UDC: 621.391.2

PERSHIN, V. T. and CHIRKIN, N. M.

"Frequency Shift and UHF Pulse Frequency Modulation in a Magneto-
static Delay Line With Adiabatically Varying Parameters"

Abstract: This paper analyzes the possibility of using a magneto-
static delay line with parameters varying in time for shifting
the frequency and the frequency modulation of UHF pulses. It is
an extension of earlier papers reporting changes in the spectrum
of magnetostatic waves propagated under conditions of adiabati-
cally varying magnetic fields. The delay line is assumed to be a
cylindrical rod of iron-yttrium garnet, placed in an external mag-
netic field of constant intensity, under the condition that the
inner magnetic field along the crystal axis is a function of the
longitudinal coordinate and the time. It is further assumed that,
at the initial moment in time, the UHF pulse in the form of a
spin wave is propagated as a plane wave and is fully contained in
the delay line. From the results of the computations, a plot is
made of the pulse frequency shift as a function of the magnetic
field intensity. This is found to agree closely with experimental
1/2

- 72 -

USSR   UDC: 621.391.2

PERSHIN, V. T. et al, Izvestiya Akademii Nauk BSSR-Seriya fiziko-tekhnicheskikh nauk, No 1, 1972, pp 122-124

results. The latter also showed that the frequency shift un-avoidably accompanied the frequency modulation, and was caused by the finite rise time of the magnetic field pulse. The authors are associated with the Minsk Radio Engineering Institute.

2/2

USSR   UDC: 621.347.5

VLASOV, A. B., SPIRIN, V. A., and CHIRKIN, N. M.

"Hypersonic Delay Lines for Ultra-Broadband Video Signals"

Kiev, Izvestiya VUZ SSSR—Radioelektronika, No 10, 1972, pp 1298-1300

Abstract: This brief communication is related to an earlier article (Vlasov, A. B., et al, O shirokopolosnom vozbuzhdenii giperzvuko- vykh voln v p'yezokristallakh s pomoshch'yu kvazistaticheskikh za- medlyayushchikh sistem — Broadband Excitation of Hypersonic Waves in Piezoelectric Crystals Using Quasi-Statistical Delay Systems — Izv. AN BSSR, Seriya fiz.-tekhn. nauk, No 4, 1970) which described quasi-stationary delay systems on the type of a low-frequency fil- ter for uniform hypersonic excitation in $LiNbO_3$ piezoelectric crys- tals. The present communication describes experiments to check the possibility of passing broadband pulses differing in shape, dura- tion and rise time through the hypersonic delay line described in the earlier article. The functional diagram of the equipment used for the experiments is given together with oscillograms of the pulses. The experimental results indicate that the delay line may be used as a solid-state delay for ultra-broadband video signals 1/2

USSR   UDC: 621.347.5

VLASOV, A. B., et al, Izvestiya VUZ SSSR--Radioelektronika, No 10,
pp 1298-1300

or as functional nodes for fast-acting computer devices.

2/2

USSR   UDC 621.374.5

PERSHIN, V.T., CHIRKIN, N.M.

"Magnetostatic Delay Line"

Abstract: The conditions are determined for use of a magnetostatic delay line
for compression of microwave signals with linear intrapulse frequency modulation.
The delaying medium is a cylindrical bar of a single crystal of yttrium iron
garnet axially magnetized to saturation. The theoretical conclusions are veri-
fied experimentally. These indicate the possibility of using the relations ob-
tained in engineering practice. Received by editors 6 July 70. 5 ref. 3 fig.

1/1

USSR   UDC 621.372.85

VLASOV, A. B., CHIRKIN, N. M.

"Analysis of the Operating Conditions of Resonating Superhigh-Frequency Ultra-
sonic Delay Lines"

Vopr. konstruir. tekhnol. i kontrolya izgotovleniya elektron. vakuumn. priborov
(Problems of Design, Technology and Control of the Manufacture of Electronic
Vacuum Devices), Minsk, 1970, pp 165-175 (from RZh-Radiotekhnika, No 8, Aug 70,
Abstract No 8B197)

Translation: This article contains a comparative estimate of two operating con-
ditions of superhigh-frequency ultrasonic delay lines: the conditions of re-
flection of sound (a signal) and the conditions for transmission. A comparison
is made from the point of view of the magnitude of the losses to conversion and
the effect of the coupling of the resonators of the ultrasonic delay lines to
the superhigh-frequency channel on it. The equivalent delay line circuits for
both operating conditions are presented. Expressions are obtained for calculating
the losses to double conversion of the superhigh-frequency ultrasonic delay line.
It is demonstrated that the optimal value of the coupling coefficient in the
reflection mode is $\sqrt{2}$ times less than in the transmission mode. There are
three illustrations and a seven-entry bibliography.
1/1

USSR   UDC 621.372.85

VLASOV, A. B., CHIRKIN, N. M.

"Analysis of Some Electroacoustic Converters for the Superhigh-Frequency Range"

Vopr. konstruir. tekhnol. i kontrolya izgotovleniya elektron. vakuumn. priborov
(Problems of Design, Technology and Control of the Manufacture of Electronic
Vacuum Devices), Minsk, 1970, pp 176-185 (from RZh-Radiotekhnika, No 8, Aug 70,
Abstract No 8B195)

Translation: By means of a parallel equivalent circuit, the parameters of super-
high-frequency piezoelectric converters are investigated. The excitation of the
converter by superhigh-frequency resonators is studied. Comparison of various
types of converters shows that the most effective is the film converter with
substrate. In addition, it can be matched directly to the superhigh-frequency
channel inasmuch as its radiation resistance is relatively small. The bibli-
ography has 11 entries.

1/1

USSR   UDC 534.1

CHIRKIN, N. M., VLASOV, A. B., BASOV, V. G.

"Problems in the Design of Resonators for Hypersonic Excitation in Piezo-electric Crystals"

Kiev, Izvestiya VUZ -- Radioelektronika, Vol 13, No 7, 1970, pp 879-883

Abstract: Papers published on the excitation of hypersonic oscillations in piezoelectric crystals using uhf do not discuss the requirements applicable to such resonators nor do they consider the problems of their optimization. The purpose of the present brief communication is to develop criteria for choosing an optimal resonator which permits an increase of the transformation factor of one or two orders above the 10^{-3} to 10^{-4} level given in previous papers. The authors derive a factor G, which is equal to the product of the characteristic figure of merit of the resonator (the losses in the dielectric equivalent of the sound conductor taken into account) and the filling factor of the resonator, which is a function of the equivalent capacitance of the electroacoustic converter. G is the measure of the resonator's efficiency and should be as large as possible. The authors also consider several reso-nator designs for providing larger values of G. Analyzing these designs, they find that their analysis agrees with the experimental data. A few details of the experimental equipment and method are given.

1/1

1/2   036   UNCLASSIFIED   PROCESSING DATE--02OCT70
TITLE--EFFECT OF HALOGENS ON IONIZATION IN A LOW PRESSURE ACETYLENE AIR
    FLAME -U-
AUTHOR-(02)-TVERDOKHLEBOV, V.I., CHIRKIN, N.N.

COUNTRY OF INFO--USSR

SOURCE--KHIM. VYS. ENERG. 1970, 4(2) 183-4

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--IONIZATION, HALOGEN, CARBON TETRACHLORIDE, ACETYLENE, LOW
    PRESSURE, FLAME, ACTIVATION ENERGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0488   STEP NO--UR/0456/70/004/002/0183/0184

CIRC ACCESSION NO--AP0107093
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0107093
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACTS. THE EFFECT OF CCl_4, IODINE OR CL ON IONIZATION IN C_2H_2 AIR FLAMES WAS STUDIED. THE RATE 1 OF IONIZATION WAS MEASURED BY THE SATN. CURRENT I SUBG. THE ACTIVATION ENERGY E WAS DETD. FROM THE LOG I SUBS VERSUS $1-T$ PLOTS. HALOGENS DID NOT AFFECT Q OR E. THE ADDN. OF SMALLER THAN OR EQUAL TO 3PERCENT DID NOT AFFECT THE MECHANISM OF PRIMARY ION FORMATION IN FLAMES.

89

UNCLASSIFIED

1/2   031   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--ION FORMATION IN AN ACETYLENE AIR FLAME STUDIED BY A SATURATION
   CURRENT METHOD -U-
AUTHOR-(02)-TVERDOKHLEBOV, V.I., CHIRKIN, N.N.

COUNTRY OF INFO--USSR

SOURCE--FIZ. GORENIYA VZRYVA 1970, 6(1), 34-7

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, CHEMISTRY

TOPIC TAGS--IONIZATION, ACETYLENE, FLAME, METHANOL, METHANE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/0902   STEP NO--UR/0414/70/006/001/0034/0037

CIRC ACCESSION NO--AP0136336
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0136336

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ION FORMATION IN C_2H_2 AIR FLAMES WAS DETD. AT PRESSURES P OF 30-85 MM BY MEASURING THE SATN. CURRENT. THE IONIZATION RATE Q CONGRUENT TO P PRIME0.56. EXTRAPOLATING TO 1 ATM GIVES Q CONGRUENT TO 2 TIMES 10 PRIME4 L.-CM PRIME3-SEC. THE EFFECTIVE ENERGY OF ACTIVATION E IS 17.9 PLUS OR MINUS 1.8 KCAL-MOLE. THE ADDN. OF ADDITIVES, SUCH AS MEOH, CH_4, ISO-AMYL ALC., HCO_2 H, NA_2CO_3, $CSNO_3$, $PBCO_3$, AND BI_2O_3, DID NOT AFFECT Q OR E.

UNCLASSIFIED

USSR

CHIRKIN, YU. D., docent, head of the Chair of Microbiology, Astrakhan Medical Institute

"Investigation of the Efficiency of Peroral Administration of Broad Spectrum Antibiotics in Experimental Gas Gangrene"

Abstract: Mice inoculated with I Dcl of related strains of gas gangrene aerobes and anaerobes (excluding Clostridium oedematiens) obtained from gangrenous wounds in human patients readily respond to broad spectrum antibiotics given in daily oral doses of 10 mg for 10 days. The best therapeutic results are obtained when the first dose of the drug is given about 3 hrs after inoculation, while the best prophylactic results are obtained when the preventive dose is given about 18 hrs prior to inoculation. Thus, depending on the groups of animals and the pathogen used, the survival rates after therapeutic and prophylactic treatments, respectively, are: 70-97% and 40-67% with ampicillin; 73-100% and 93-100% with rubitracin; 80-100% and 93-100% with sigmamycin; 100% and 37-100% with tetracycline; and 100% and 100% with dipasphen (0% survival rate in all control groups). Concurrent administration of prodigiozan (10 gamma subcutaneously on the 3d, 6th, and 9th days) is indicated, because

1/2

USSR

CHIRKIN, YU. D., Antibiotiki, Vol 18, No 1, 1973, pp 38-42

this polysaccharide stimulates elimination of the pathogen from the host's body and thus shortens the clearance period.

2/2

PROPHYLACTIC EFFECT OF ANTIBIOTIC COMBINATIONS IN EXPERIMENTAL GAS INFECTIONS

Yu. D. Chirkin

Microbiological Department of Astrakhan Medical Institute

The prophylactic effect of ecmonovocillin-1 in combination with tetracycline administered in doses of 10 000 and 1000 Units to the site of injection 5, 4, 3, 2 and 1 day before the lethal inoculation with the associative strains, including Bac. perfringes, Bac. edematiens, Bac. septicus, Staphylococcus, Proteus vulgaris and Coli bacteria was studied. It was found that the above antibiotics had a prophylactic effect, when ecmonovocillin combination with tetracycline was administered 3—1 day before the lethal inoculation with the associative strains, containing no Bac. edematiens.

Dr.

REEL/FRAME
19711070

TITLE--INTERNAL FRICTION OF ZINC SINGLE CRYSTALS AFTER TWINNING
   DEFORMATION -U-

AUTHOR-(03)-GINDIN, I.A., OKOVIT, V.S., CHIRKINA, L.A.

COUNTRY OF INFO--USSR

SOURCE--FIZ. METAL. METALLOVED. 1970, 29(1), 162-7

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--METAL INTERNAL FRICTION, METAL SINGLE CRYSTAL, ZINC, TWINNING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0699   STEP NO--UR/0126/70/029/001/0162/0 7

CIRC ACCESSION NO--AP0105675
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0105675

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DISSIPATIVE CAPABILITIES OF
THE DEFORMATION TWIN BOUNDARIES OF ZN WERE INVESTIGATED BY THE INTERNAL
FRICTION METHOD. THE MEASUREMENTS WERE MADE ON A REVERSE TORSIONAL
PENDULUM AT FREQUENCIES OF 1.1 AND 3.0 HZ WITHIN THE AMPLITUDE
INDEPENDENT REGION. THE WORKING AMPLITUDE WAS NOT GREATER THAN 1.5 TIME
10 PRIME NEGATIVE5. THE SAMPLES WITHOUT TWINS ARE CHARACTERIZED BY A
MONOTONIC BEHAVIOR OF DELTA(T) WITHOUT ANOMALIES. FOR SAMPLES DEFORMED
BY TWINNING, A PEAK OCCURS ON THE DELTA(T) CURVE AT 240DEGREESK. THE
TEMP. BEHAVIOR OF THE ATTENUATION.DECREMENT WAS DETD. AS A FUNCTION OF
THE IMPURITY CONTENT, THE AMPLITUDE, AND THE FREQUENCY OF VIBRATIONS.
THE CHANGE IN THE WIDTH OF THE TWIN INTERLAYERS DURING THE INTERNAL
FRICTION MEASUREMENTS WAS ALSO DETD. THE ANOMALIES OF THE OBSD. PEAK
ARE COMPARED WITH CERTAIN OTHER INTERNAL FRICTION PEAKS.

UNCLASSIFIED

USSR   UDC 669.5:539.67

GINDIN, I. A., OKOVIT, V. S., and CHIRKINA, L. A., Physicotechnical Institute,
Academy of Sciences Ukr SSR

"Internal Friction of Zinc Single Crystals After Twinning Deformation"

Abstract: An experimental investigation was made to determine the temperature
and frequency dependence of the internal friction of original zinc single crystals
and ones deformed by twinning. The crystals varied in purity. The dissipative
possibilities of deformation twin boundaries were investigated by the internal
friction method. Single-crystal zinc of 99.998% (Zn-A) and 99.98% (Zn-B) purity
was selected to investigate the phenomena of inelasticity related to the presence
of deformation twins. Measurements were carried out on a reverse torsional
pendulum at frequencies of 1.1 and 3.0 hz in the amplitude-independent region,
with an operational amplitude not exceeding 1.5×10^{-5}. It is shown that the
temperature dependence δ (T) of the zinc single-crystal decrement of all samples,
without twins, is characterized by a nearly horizontal curve with no anomalies,
in the range of temperatures considered.

1/2

USSR

In samples deformed by twinning, a peak appeared on the characteristic at 240°C. The initial behavior (of all characteristics of originals and with twin inter- layer) coincided. This fact indicates, as does the conducted X-ray analysis, that with twinning deformation the matrix remains undistorted. The effect of impurity content, amplitude, and frequency on the temperature dependence of a damping decrement was investigated. The distinctive properties of the peak, owing to the motion of twin boundaries (variation of temperature and peak height with the oscillation frequency) were identical to the peak characteristic with martensite transformations. This is of great interest, because a similarity is also observed in the kinetics of the martensite needle and twin interlayer growth. Orig. art. has: 3 figures.

2/2

Abstract: Results are presented from a study on the magnetic susceptibility of tin, bismuth, and their alloys (10, 20, 30, 40, 43, 50, 60, 70, 80, and 90 at.% Bi) in the solid and liquid states. The feature of the concentration relationship of magnetic susceptibility of liquid alloys containing approximately 20 at.% was noted. On the basis of the values of m/m^*, obtained in the work (m-- free electron mass, m*--effective electron mass), there was noted a tendency of conductivity electron interaction in Sn-Bi melts. 3 figures, 1 table, 24 bibliographic references.

1/1

UNDERWATER TRAINING AS ONE OF THE FACTORS INCREASING VESTIBULAR-AUTONOMIC STABILITY

In most investigations by Soviet and foreign authors devoted to study of the influence of underwater sports on the vestibular apparatus the emphasis for the most part has been on vestibular-sensory reactions (Boender, 1960; Margaria, 1965; Rigt, 1966).

Vestibular-somatic and vestibular-autonomic reactions have been less studied; only a few communications have dealt with these aspects (V. A. Levando, 1967; Yo. Ya. Lopukhin, 1967; S. N. Makarov, 1968).

During a conference on underwater swimming at Augusta we studied the effect of underwater training on the somatic and autonomic components of vestibular reactions with the participation of eight healthy males in the age group from 29 to 37 years who had earlier undergone a cycle of preliminary exercises. Five men (the main group) had undergone a course in underwater training and three men constituted the control group and had not participated in the training.

The training, conducted under a specially formulated program (S. N. Makarov, 1968), included different exercises performed under water: acrobatics (rotation in different planes and different types of figure swimming), diving and swimming in outfit No. 2 (with an aqualung) using a compass oriented by markers on the bottom and on the sun, underwater hunting and motion picture surveys underwater. There was a total of 14 underwater training sessions, of which seven were directed to improving underwater orientation.

Receivers and Transmitters

CHIRKOV, D. V.

"Characteristics of Adaptive Optimal Detection of Gaussian Signals in a Pulse Noise Background for Receivers With Logarithmic Amplifiers"

Abstract: This paper is the continuation of an earlier article published by the author named above in the same journal (Kharakteristiki optimal'nogo algoritma obnaruzheniya gaussovykh signalov na fone impul'snykh pomekh dlya priyemnikov s logarifmicheskim usilitelem -- Characteristics of the Optimal Algorithm for Detecting Gaussian Signals on a Pulse Noise Background in Receivers With Logarithmic Amplification -- 15, No 4, 1972) which considered the problem of finding an optimal algorithm for the detection of Gaussian signals in a background of an additive combination of Gaussian noise and random pulse noise of known amplitude and known duty cycle in receivers with logarithmic amplification. In the present paper, it is shown that the detection algorithm is obtained with

1/2

the use of a nonlinear functional transformation of the form:

$$Z = \begin{cases} c(e^y - 1)^2 & \text{at } y \leqslant b \\ c(e^y - 1)^2 - (e^b - 1)(e^y - e^b) & \text{at } y > b, \end{cases}$$

where y are selected readings of the mixed signal and noise enve-
lope at the input to a nonlinear functional converter, c is a con-
stant, and $b = \ln(1 + \alpha a)$, where α is the logarithmic amplifier
parameter and a is the circuit parameter. The block diagram for
the adaptive optimal detection algorithm is given.

2/2

USSR   UDC 621.391.833

CHIRKOV D. V.

"Characteristics Of The Optimum Algorithm Of The Detection Of Gaussian Signals
On A Background Of Pulse Interference For Logarithmic Amplifier Receivers"

Abstract: The problem is considered of the post-detector detection of a
Gaussian signal on a background of Gaussian noise with a fixed dispersion and
random pulse interference, with a known on-off time ratio and a known ampli-
tude at the output of the system: logarithmic IF amplifier--linear detector. On
the basis of a synthesis, a functional circuit of an optimum detection receiv-
er is proposed, and an analysis is made of the efficiency of the algorithm in
question for a binary system of detection. The characteristics of the detection
and the results of simulation on the BESM-6 are presented. 2 fig. 1 ref.
Received by editors, 26 May 1971.

1/1

Nuclear Science and Technology

CHIRKOV, I. V.

"Nuclear Power Engineering and Thorium Resources"

Abstract: In this article the aspects of using thorium as a replacement
for uranium in nuclear power engineering are expounded. The following
conclusions were presented.
      The requirements for uranium in the development of nuclear power
engineering will be measured in millions of tons, which may deplete uranium
reserves. The use of thorium as a replacement for uranium will permit a
substantial reduction in the consumption of uranium, and since the reserves
of thorium are about the same as those of uranium and thorium is a more
reliable source of nuclear fuel, the specific consumption of thorium per
unit of atomic power station power is several times less than that of uranium,
Technological and engineering difficulties which have hindered wide use of
thorium in the past decade have been overcome. One of the important advantages
of thorium reactors is that almost all thorium can be converted to $U233$.
Thorium heat converters and thermal breeders are structurally simpler rapid
breeders. Calculations have shown that by 1980 thousands of tons of thorium
will be required and in the following decades this requirement will increase
1/2

USSR

CHIRKOV, I. V., Atomnaya Energiya, Vol 30, No 6, Jun 71, pp 526-533

to tens of thousands of tons. Growth in the requirements for thorium
undeniably leads to expansion of geologic works on increasing explored
reserves of thorium, improving methods of enriching complex ores, and re-
processing thorium-containing concentrates and tailing for the purpose of
extracting thorium. One table, 32 bibliographic references.

2/2

Information Theory

USSR

UDC: 62-523.8; 535.8:681.2

KRAVTSOV, N. V., CHIRKOV, L. Ye., and POLYACHENKO, V. L. (edited by Academician B. N. Petrov)

Elementy Optoelektronnykh Informatsionnykh Sistem (Elements of Optoelectronic Information Systems), book, 223 pp, 1970. Published by the Academy of Sciences USSR, Ministry of Instrument Construction, Automation Techniques and Control Systems, Order of Lenin Institute of Control Problems (Automation and Remote Control), Printed by "Nauka" Publishing House, Moscow

Extract: The authors attempt to demonstrate the enormous potentialities of optical electronics in information technology, to systematize the various methods of constructing optoelectronic devices, and to classify them.

Many problems in optoelectronics have not been adequately covered in this book; a number have merely been stated, while others have been ignored. The authors attempted not so much to treat exhaustively all possible optoelectronic elements in information systems and their design principles, but to interest the reader in the new trends in modern science and to focus attention on the great promises it represents.

1/4

USSR

KRAVTSOV, N. V., et al, Elementy Optoelektronnykh Informatsionnykh Sistem
(Elements of Optoelectronic Information Systems), book, 223 pp, 1970. Pub-
lished by the Academy of Sciences USSR, Ministry of Instrument Construction,
Automation Techniques and Control Systems, Order of Lenin Institute of Control
Problems (Automation and Remote Control), Printed by "Nauka" Publishing House,
Moscow

CONTENTS

2/4

USSR

KRAVTSOV, N. V., et al, Elementy Optoelektronnykh Informatsionnykh Sistem
(Elements of Optoelectronic Information Systems), book, 223 pp, 1970. Pub-
lished by the Academy of Sciences USSR, Ministry of Instrument Construction,
Automation Techniques and Control Systems, Order of Lenin Institute of Control
Problems (Automation and Remote Control), Printed by "Nauka" Publishing House,
Moscow

3/4

USSR

KRAVTSOV, N. V., et al, Elementy Optoelektronnykh Informatsionyykh Sistem (Elements of Optoelectronic Information Systems), book, 223 pp, 1970, Published by the Academy of Sciences USSR, Ministry of Instruction Construction, Automation Techniques and Control Systems, Order of Lenin Institute of Control Problems (Automation and Remote Control), Printed by "Nauka" Publishing House, Moscow

[Note: Approximately half of the 225 references cited in the bibliography are to USSR papers and publications.]

4/4

1/2   012   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--ON UTILIZATION OF OPTIC MODULATORS FOR FULFILLING LOGICAL
    OPERATIONS -U-
AUTHOR-(02)-KRAVTSOV, N.V., CHIRKOV, L.YE.

COUNTRY OF INFO--USSR

SOURCE--AVTOMATIKA I TELEMEKHANIKA, 1970, NR 2, PP 124-128

DATE PUBLISHED-------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--LOGIC DESIGN, COMPUTER LOGIC, OPTIC MODULATOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1983/1975   STEP NO--UR/0103/70/000/002/0124/0128

CIRC ACCESSION NO--AP0054773
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0054773

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROBLEM OF USING OPTIC
MODULATORS FOR THE DESIGN OF LOGICAL FUNCTIONAL SCHEMES IS CONSIDERED.
IT IS SHOWN THAT THE COMBINATION OF TWO OPTIC MODULATORS PROVES TO BE
SUFFICIENT FOR THE REALIZATION OF THE MAJORITY OF LOGICAL SCHEMES. THE
MAIN VARIANTS OF THEIR REALIZATION ARE CONSIDERED.

UNCLASSIFIED

USSR

681.128.8(088.8)

KRAVTSOV, N. V., PANFILOV, A. S., CHIRKOV, L. YE.

"Compensation Optical Level Meter"

USSR Authors' Certificate No. 243872, Filed 18/01/68, Published 6/10/69 (translated from Referativnyy Zhurnal Metrologiya I Izmeritel'naya Tekhnika, No. 4, 1970, Abstract No. 4.32.941P, unsigned)

Translation: The compensation optical level meter suggested contains a radiation source and receiver, sensing element and electronic recording system. In order to increase sensitivity and accuracy, the sensing element consists of two hollow light guides, coaxially placed one in the other, the space between which is filled with the liquid to be measured, with a Kerr cell at the output of the light guide, made of two coaxially located cylindrical and one central electrodes. One illustration.

1/1

USSR

UDC 8.74

CHIRKOV, M. K., and SHARTUKOV, A. P.

"An Abbreviated Check-Sum Checking Method"

V sb. Metody vychisleniy (Computational Methods -- Collection of Works), vyp. 7, Leningrad, Leningrad University, 1971, pp 129-139 (from RZh-Matematika, No 5, May 72, Abstract No 5V511 by V. MIKHEYEV)

Translation: The following theorem is proved: If $X(n)$ is the total check sum of some array of n-digit binary numbers and $n = kq \geqslant 1$ where k, q are integers then, as a result of its q-convolution, $X(q)$ -- an abbreviated check sum of this array -- is obtained. The n-digit binary number $X(n)$, obtained by the addition of the numbers $X^{(i)}$ ($i = 1, 2, \ldots, m$ with cyclic carry from high-order to low-order digit), is said to be the check sum of the array $X^{(i)} = \sum\limits_{j=1}^{n} 2^{j-1} X_j^{(i)}$,

$X_j^{(i)} \in \{0,1\}$, $i = 1,2,\ldots,m$. The q-digit binary number $X(q)$, obtained by addition of the q-digit binary numbers $X_r^{(i)}$ ($r = 1,2,\ldots,k$ with cyclic carry from high-order to low-order digit), is said to be abbreviated check sum of this array of numbers. The article also considers the case of several arrays.
1/2

USSR

CHIRKOV, M. K. and SHARTUKOV, A. P., Metody vychisleniy, vyp 7, 1971, pp 129-139

The abbreviated checking algorithm consists in the following: 1. Calculation of the abbreviated check sum of an array (or arrays) of numbers by feeding the digits of these numbers as consecutive groups with q digits in each group to the adder. 2. Inversion of the total check sum closing the array, and feeding the inverted check sum to the adder in groups of q digits each. 3. Check on correct receipt of the array of numbers by reference to the contents of the adder. This algorithm is illustrated with an example.

2/2

USSR

UDC: 8.74

CHIRKOV, M. K., SHARTUKOV, A. P.

"On an Abbreviated Check-Sum Method"

V sb. Metody vychisleniy (Methods of Computations--collection of works), vyp. 7, Leningrad, Leningrad University, 1971, pp 129-139 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V511)

Translation: The following theorem is proved. If $X(n)$ is the complete check sum of any mass of n-place binary numbers and $n = kq \geqslant 1$, where k, q are integers, then as a result of the q-contraction of the sum we get $X(q)$ -- the abbreviated check sum of this mass of numbers. The check sum (KE)

of the mass $X^{(i)} = \sum_{j=1}^{n} 2^{j-1} x_j^{(i)}$, $x_j^{(i)} \in \{0,1\}$, $i = 1, 2, \ldots, m$, is the n-place binary number

$X(n)$ obtained by adding the numbers $X^{(i)}$, $i = 1, 2, \ldots, m$, with end-around carry from the most significant to the least significant places. The abbreviated KE of a given mass of numbers is the q-place binary number $X(q)$ obtained

by adding the q-place binary numbers $X_r^{(i)}$, $r = 1, 2, \ldots, k$, with cyclic carry

1/2

USSR

CHIRKOV, M. K., SHARTUKOV, A. P., Metody vychisleniy, vyp. 7, Leningrad, Leningrad University, 1971, pp 129-139

from the most significant to the least significant digits. The case of several number masses is also considered. The abbreviated check algorithm consists in the following. 1. Calculation of the abbreviated $K\Sigma$ of a mass (or masses) of numbers by feeding the digital places of these numbers to the adder in sequential groups of q places in each group. 2. Inversion of the complete $K\Sigma$ which closes the mass, and feeding the inverted $K\Sigma$ to the adder in groups of q places each. 3. Checking proper reception of the mas from the content of the adder. The algorithm is illustrated by an example. V. Mikheyev.

2/2

USSR

UDC 51:621.391

CHIRKOV, M. K.

"Analysis of Interference-Stability of Functions in Logic Algebra"

Moscow, Vychisl. tekhn. i vopr. kibernet.--Sbornik (Computers and Problems in Cybernetics -- Collection of Works), Moscow University, No 7, 1970, pp 103-118 (from Referativnyy Zhurnal -- Matematika, No 6, June 71, Abstract No 6V445, by Yu. Flerov)

Translation: The interference stability of a function in logic algebra $F = F(x_1, \ldots, x_n)$ is the term given to the probability $P(\alpha_F)$ that the function F preserves its proper value for assigned propabilities P_{is_i}, $i = 1, 2, \ldots, n$, $s_i \in \{0, 1\}$, and that the arguments preserve the proper values and the given distribution of probabilities in different combinations of the proper values of the arguments μ_s, $s = 0, 1, \ldots, 2^{n-1}$. Earlier the author obtained a general expression for the probability $P(\alpha_F)$. This present work considers functions of logic algebra of 1/2

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CHIRKOV, M. K., Vychisl. tekhn. i vopr. kibernet.--Sbornik, No 7, 1970, pp 103-118

the form $F_{n+q} = F_q * F_n$, where $F_n(x_1, x_2, \ldots, x_n)$, $F_q(x_{n+1}, x_{n+2}, \ldots, x_{n+q})$ are some functions of logic algebra, and the symbol * implies any of the two-place operations (conjunction, Scheffer stroke, disjunction, Pierce arrow, implication, prohibition, addition by modulo 2, and equivalence). The coefficients $A_{s_n}^{(n)}$, $A_{s_q}^{(q)}$, and A_s, of the functions F_n, F_q, and F_{n+q}, respectively are associated by the relation $A_s = A_s^{(q)} * A_s^{(n)}$, where $s = 2^n s_q + s_n$. This relation is used in studying the relationship between certain variables characterizing the interference stability of the functions F_q, F_n, F_{n+q}. The successive application of the formula $F_{n+q} = F_q * F_n$ and the "inversion" operation, beginning with the initial arguments x_i, defines a certain class of functions in logic algebra. If this successive process of deriving it is given for any function from a given class, then we can use the established recursion relations to find the activities of the element groups and the interference stability of the function.

2/2

USSR

UDC: 8.74

CHIRKOV, M. K.

"Some Problems in Analysis of the Stability of Computer Circuits in the Case of Random Breakdowns"

V sb. Vychisl. tekhn. i vopr. kibernet. (Computer Technology and Problems of Cybernetics--collection of works), vyp. 6, Leningrad University, 1971, pp 44-55 (from RZh-Kibernetika, No 1, Jan 72, Abstract No 1V967)

Translation: The author considers the problem of optimizing and analyzing the logic structure and components of a keyboard computer. The purpose of optimizing the quality criterion of a keyboard computer is to improve the resistance of the logic structure to random breakdowns where this structure is presented on the digital automaton level. Examples are presented of simple problems in analysis of the probabilistic characteristics of combination circuits, and an investigation is made of the way in which the quality criterion of a keyboard computer is affected by repeated setups of initial information and introduction of interlocks tending to improve the operational stability of the computer. A. Doroshenko.

1/1   - 33 -

USSR   UDC: 8.74

CHIRKOV, M. K.

"On the Problem of an Optimum Restoring Element"

V sb. Vychisl. tekhn. i vopr. kibernet. (Computer Technology and Problems
of Cybernetics--collection of works), vyp. 6, Leningrad, Leningrad Uni-
versity, 1971, pp 56-67 (from RZh-Kibernetika, No 1, Abstract No 1V968)

Translation: The given problem is formulated from the standpoint of analysis of
a single-output combination circuit with unreliable elementary input chan-
nels. The function $F(y_1, ..., y_n)$ of logic algebra realized by the combination

circuit is not defined, but the probabilities $p_L \geq \frac{1}{2}$, $L = 0, 1, ..., 2^{n-1}$ of cor-

rect operation of the combination circuit during a single cycle when

$y_L = (y_n = l_n, ... y_1 - l_1)$ $l_i \in \{0, 1\}$ and $L = \sum_{i=0}^{n} 2^{i-1} l_i$ are given. It is required to de-

termine the function $(y_1, ..., y_n)$ which maximizes the average probability $p(\alpha_F)$
of correct operation of the circuit for a period of one cycle. The problem
is solved by the method of probabilistic logic. The case where all input
automata have identical probability properties is considered separately.
The method of optimizing the restoring element is illustrated by examples.
A. Doroshenko.

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USSR   UDC: 51.621.391

CHIRKOV, M. K.

"Probabilistic Problems in Supplementing the Definition of Partial Automata Without Memory"

V sb. Vychisl. tekhn. i vopr. kibernet. (Computer Technology and Problems of Cybernetics--collection of works), vyp. 8, Leningrad, Leningrad University, 1971, pp 66-81 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V599)

Translation: The author defines a probabilistic automaton without memory as the triplet $C_{pr} = (X, Y, R)$, where X, Y are the input and output alphabets, R is the set of probabilities $R_{SL} = P(Y_L / X_S)$ of output Y_L in the case of

input X_S $(X_S \in X, Y_L \in Y)$, where $\sum_L R_{SL} = 1$.   The following problem is solved.

Given is a deterministic partial automaton without memory $C^*_{det} = (X, Y, \varphi)$ $(X, Y$ are the input and output alphabets, φ is the function of the outputs).

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USSR

CHIRKOV, M. K., Vychisl. tekhn. i vopr. kibernet., vyp. 8, Leningrad, Leningrad University, 1971, pp 66-81

Also given for the input symbols from X is the distribution of probabilities μ of their arrival. Now let a communications channel which may distort the transmitted symbol be connected between a source of symbols $X_s \in X$ with distribution μ and the automaton C_{det}^*. Such a communications channel may be represented as a probabilistic automaton without memory $C_{pr}' = (X, X, U')$. It is required to supplement the definition of automaton C_{det}^* in such a way as to maximize the average probability of transmission of a proper symbol by the automaton. The paper presents an algorithm of supplementary definition together with the corresponding proof. Some special cases of the main problem are also considered. N. Katerinochkina.

2/2

- 23 -

USSR   UDC: 681.3

SHAUMAN, A. M., CHIRKOV, M. K.

"Execution of Arithmetic Operations With Automatic Location of the Decimal
Point"

V sb. Vychisl. tekhn. i vopr. kibernet. (Computer Technology and Problems
of Cybernetics--collection of works), Vyp. 6, Leningrad, Leningrad Uni-
versity, 1971, pp 3-20 (from RZh-Kibernetika, No 12, Dec 71, Abstract
No 12V897)

[No abstract]

1/1

CHIRKOV, M. K.

"Analysis of Interference Stability of Logical Algebra Functions"

Translation: The interference stability of logical algebra functions $F = F(x_1,$
..., $x_n)$ refers to the probability $P(\alpha_F)$ of retention by function F of its
correct value with fixed probabilities P_{is_i}, $i = 1, 2, \ldots, n$, $s_i \in \{0,1\}$, retention
by the arguments of their correct values and fixed probability distribution of
various combinations of correct values of arguments μ_s, $s = 0,1, \ldots, 2^{n-1}$.
Earlier, the author produced a general expression for probability $P(\alpha_F)$. In the
present work, logical algebra functions of the form $F_{n+q} = F_q * F_n$ are studied,
where $F_n(x_1, x_2, \ldots, x_n)$, $F_q(x_{n+1}, x_{n+2}, \ldots, x_{n+q})$ are certain logical algebra
functions, while the symbol $*$ represents any two place operation (conjunction, the
Schaeffer prime, disjunction, the Pierce arrow, implication, blocking, modulo to
addition, equivalence). The coefficients of the sdnf $A_s^{(n)}$, $A_s^{(q)}$, A_s of the

functions F_n, F_q and F_{n+q} respectively are related by the formula $A_s = A_{s_q}^{(q)} * A_{s_n}^{(n)}$,

where $s = 2^n s_q + s_n$. This last relationship is used to study the connection be-

tween certain quantities characterizing the interference stability of function F_q,

F_n and F_{n+q}. Successive application of the formula $F_{n+q} = F_q * F_n$ and the operation

of "inversion," beginning with the initial arguments x_i, defines a certain class

of logical algebra functions. If for any function of this class a sequential
process of its production is assigned, the recurrent relationships established
can be used to determine the activities of groups of elements and the interfer-
ence stability of the function.

CHIRKOV, M. K.

"Analysis of Compositions of Unreliable Automata"

Translation: Successive stages in the solution of the general problem of analysis of combinations of unreliable automata are presented, based on the works of the author, and an example is presented, illustrating the possibility of applying this type of analysis for comparative evaluation of various versions of structural plans of automata.

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USSR

UDC 681.142.62

YEVSEYEV, G. T., MARCHUK, A. A., KHOMOVNENKO, M. G., CHIRKOV, M. K., Candidate of Physical and Mathematical Sciences, SHAUMAN, A. M., Candidate of Physical and Mathematical Sciences

"Keyboard Data Input Device for Computers"

Abstract: This article contains a description of a keyboard electronic digital data input device built from two ferrite cores with external magnetization. The device is designed for generating a single pulse which proceeds synchronously with the basic cycle frequency to the computer after each complete movement of one of the keys. The device was designed to satisfy requirements of high reliability and high speed. By using two different outputs from one key for entering the code and blocking, the effect of vibration and other mechanical effects are excluded, and all remaining keys are blocked effectively on pressing one of them. The input device is constructed as a closed automatic control system insuring uniqueness of the input data.

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- 53 -

USSR

UDC 681.142.62

YEVSEYEV, G. T., MARCHUK, A. A., KHOMOVNENKO, M. G., CHIRKOV, M. K., Candidate of Physical and Mathematical Sciences, SHAUMAN, A. M., Candidate of Physical and Mathematical Sciences

"Keyboard Data Input Device for Computers"

Abstract: This article contains a description of a keyboard electronic digital data input device built from two ferrite cores with external magnetization. The device is designed for generating a single pulse which proceeds synchronously with the basic cycle frequency to the computer after each complete movement of one of the keys. The device was designed to satisfy requirements of high reliability and high speed. By using two different outputs from one key for entering the code and blocking, the effect of vibration and other mechanical effects are excluded, and all remaining keys are blocked effectively on pressing one of them. The input device is constructed as a closed automatic control system insuring uniqueness of the input data.

1/1

- 53 -

USSR   UDC: 51:621.391

CHIRKOV, M. K., SHILKEVICH, T. P.

"On the Realizability of Probabilistic Automata by Automata With Random Inputs"

Translation: In a previous paper (RZhMat, 1968, 12V293) an investigation was made of the problem of synthesizing a self-contained probabilistic finite automaton in the form of a combination of a non-autonomous deterministic finite automaton and a source of a random sequence of symbols. In another paper (RZhMat, 1968, 7V299) a similar problem was examined as applied to a non-autonomous probabilistic finite automaton with marked states operating in some random medium. In the article being abstracted here, the given problem is considered in the general case. A method is proposed for synthesizing and evaluating the required number of inputs. G. Blokhina.

67362z **Molecular weight distribution of polyolefins.** Belov, H. P.; Lisitskaya, A. P.; Solov'eva, T. I.; Chirkov, N. M. (Inst. Chem. Phys., Moscow, USSR). *Eur. Polym. J.* 1970, 6(1), 29-40 (Eng). Mol. wt. distributions of polyethylene and ethylene-pro-pylene copolymers prepd. with Ziegler-Natta catalysts were studied by pptn. fractionation. The mol. wt. distribution in polyethylene prepd. in the presence of a sol. catalytic system, $(C_5H_5)_2TiCl_2-Et_2AlCl$ was bimodal owing to the existence of two types of active centers. The effects of polymn. time, catalyst and solvent natures, and presence of propylene in the ethylene on mol. wt. distribution were investigated. The fractionation results were correlated with the kinetic data on ethylene polymn. The possible mechanism of ethylene polymn. in an alkyl halide medium in the presence of $(C_5H_5)_2TiCl_2-Et_2AlCl$ was discussed with respect to the data on mol. wt. distributions.   RCDL

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7 dc

TITLE--STEREOSPECIFIC MECHANISM OF OLEFIN POLYMERIZATION BY HETEROGENEOUS
  COMPLEX CATALYSTS. 1. DEGREE OF THE CATALYST SURFACE FILLING WITH ACTIVE
AUTHOR-(03)-KISSIN, YU.V., MEZHIKOVSKIY, S.M., CHIRKOV, N.M.

COUNTRY OF INFO--USSR

SOURCE--EUR. POLYM. J. 1970, 6(2), 267-79

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--POLYMERIZATION, CATALYST ACTIVITY, ORGANOMETALLIC COMPOUND,
  PROPYLENE, TITANIUM CHLORIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1850   STEP NO--UR/0000/70/006/002/0267/0279

CIRC ACCESSION NO--AP0112834
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0112834
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROBLEM OF THE DEGREE OF
  FILLING OF THE CATALYST SURFACE BY ACTIVE SITES IN THE CASE OF
  HETEROGENEOUS ZIEGLER NATTA CATALYST (A-TICL SUB3-ALET SUB3) IS EXAMD.
  THE KINETIC DATA FOR PROPYLENE POLYMN. ON THE A-TICL SUB3-ALET SUB3
  SYSTEM IN THE PRESENCE OF MEOH AND WATER SHOW THAT THE CONCN. OF ACTIVE
  SITES ON THE CATALYST SURFACE IS SIMILIAR TO 3.10 PRIME18 SITES-M
  PRIME2. THIS VALUE CORRESPONDS TO SIMILIAR TO 35 A PRIME2 PER ACTIVE
  SITE AND LEADS TO THE CONCLUSION THAT ACTIVE SITES COVER PRACTICALLY ALL
  OF THE CATALYST SURFACE AND CONSEQUENTLY ARE PREDOMINANTLY LOCATED ON
  THE BASAL PLANES OF THE TICL SUB3 CRYSTALS. SOME ASPECTS OF THE
  REACTIONS BETWEEN THE CATALYST COMPONENTS AND THE NATURE OF THE ACTIVE
  SITE ARE DISCUSSED.   FACILITY: POLYM. DEP., INST. CHEM. PHYS.,
  MOSCOW, USSR.

UNCLASSIFIED

1/2   022   UNCLASSIFIED   PROCESSING DATE--20NOV70
TITLE--STEREOSPECIFIC MECHANISM OF OLEFIN POLYMERIZATION BY HETEROGENEOUS
   COMPLEX CATALYSTS. II. MODEL OF THE STEREOSPECIFIC POLYMERIZATION SITE
AUTHOR-(02)-KISSIN, YU.V., CHIRKOV, N.M.

COUNTRY OF INFO--USSR

SOURCE--EUR. POLYMN. J. 1970, 6(3), 525-35

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CATALYTIC POLYMERIZATION, CRYSTAL LATTICE, TITANIUM CHLORIDE,
   VANADIUM CHLORIDE, ALKENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1156   STEP NO--UK/0000/70/006/003/0525/0535

CIRC ACCESSION NO--AP0128578
                              UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO--AP0128578   PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MODEL OF THE ACTIVE SITE OF POLYMN. ON HETEROGENEOUS ZIEGLER NATTA CATALYSTS IS CONSIDERED. IT IS LOCATED ON BASAL PLANES OF LATTICE CRYSTALS OF TYPE ALPHA,TICL SUB3 OF VCL SUB3 AND HAS 2 VACANCIES AT THE TRANSITION METAL ATOM. ONE OF THESE VACANCIES IS BLOCKED BY THE HELICAL POLYMER CHAIN AND THE OTHER IS AVAILABLE FOR OLEFIN COORDINATION. THE STUDY OF THE ACTION OF THIS MODEL SHOWS 2 TYPES OF STEREOSPECIFIC CONTROL OVER MONOMER COORDINATION; BY THE GROWING HELICAL POLYMER CHAIN AND BY NEIGHBORING TRANSITION METAL ATOMS. SOME KINETIC ASPECTS OF OLEFIN POLYMN. WITH PRELIMINARY COORDINATION ARE DISCUSSED.   FACILITY: POLYM. DEP., INST. CHEM. PHYS., MOSCOW, USSR.

UNCLASSIFIED

TITLE--MECHANISM AND KINETICS OF THE POLYMERIZATION OF OLEFINS ON COMPLEX
   CATALYSTS -U-
AUTHOR--CHIRKOV, N.M.

CCUNTRY OF INFO--USSR

SOURCE--KINET. KATAL. 1970, 11(2), 321-32

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ALKENE, CATALYTIC POLYMERIZATICN, COMPLEX COMPOUND, TRANSITION
   METAL, POLYMERIZATICN KINETICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1732   STEP NO--UR/0195/70/011/002/0321/0332

CIRC ACCESSICN NO--AP0125353
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0125353

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FUNDAMENTAL KINETIC PRINCIPLES OF OLEFIN POLYMN. OF HETEROGENEOUS AND HOMOGENEOUS COMPLEX CATALYSTS ARE EXAMD. RATE CONSTS. OF THE VARIOUS STEPS ARE COMPARED WITH ANALOGOUS PARAMETERS CF FREE RADICAL AND IONIC POLYMNS. INSERTION OF OLEFIN INTO THE TRANSITION METAL C BOND IS APPARENTLY THE FIRST STEP OF CHAIN GROWTH. INTERACTION CF GROWING CHAIN ENDS AND OLEFIN IS CONSIDERED A QUASIRADICAL REACTION.   FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

UNCLASSIFIED
TITLE--ALUMINUM POLYOLEFIN COMPOUNDS -U-   PROCESSING DATE--04DEC70

AUTHOR-(05)-CHIRKOV, N.M., BEYKHOLD, G.A., BRIKENSHTEYN, KH.M., KANASHKIN,
   YU.F., MATKOVSKIY, P.YE.
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 264,692
REFERENCE--OTKRYTIYA, IZOBRET., PROM OBRAZTSY, TOVARNYE ZNAKI, 1970 47(9),
DATE PUBLISHED--03MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL PATENT, ALUMINUM, POLYOLEFIN RESIN, POLYMERIZATION,
   ETHYLENE, METAL CONTAINING POLYMER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/0848   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0136282
                        UNCLASSIFIED

2/2   023
CIRC ACCESSION NO--AA0136282   UNCLASSIFIED   PROCESSING DATE--04DEC70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AL, POLYOLEFIN COMPDS. ARE PREPD.
BY POLYMN. OR COPOLYMN. OF C SUB2 H SUB4 WITH OTHER ALPHA, OLEFINS IN AN
INERT HYDROCARBON SOLVENT IN THE PRESENCE OF AL OR ITS ALLOYS (E.G., IN
THE FORM OF POWDER, FLAKES, WIRE, AND SHAVINGS) AND A CATALYST. THE
CATALYSTS USED ARE TRANSITION, METAL HALIDES OR HYDROXYHALIDES SOL. IN
HYDROCARBONS, E.G. V HYDROXYCHLORIDE.   FACILITY: FILIAL
INSTITUTA KHIMICHESKOY FIZIKI AN SSSR.

UNCLASSIFIED

1/2   020   UNCLASSIFIED   PROCESSING DATE—30OCT70
TITLE—RADIO FREQUENCY CONTROL SYSTEM FOR THE BEAM OF THE 70 GEV PROTON
   SYNCHROTRON -U-
AUTHOR-(04)-IVANOV, YU.S., KALININ, V.A., KUZMIN, A.A., CHIRKOV, S.V.

CCUNTRY OF INFO—USSR

SCURCE—(CERN TRANS 69-24) NTD 6823. 11P. DEP. CFSTI

DATE PUBLISHED————70

SUBJECT AREAS—PHYSICS

TOPIC TAGS—SYNCHROTRON, PROTON, FREQUENCY CONTROL

CCNTROL MARKING—NO RESTRICTIONS

DOCUMENT CLASS—UNCLASSIFIED
PROXY REEL/FRAME—3001/1912   STEP NO—UR/0000/70/000/000/0001/0011

CIRC ACCESSICN NO—AT0127313
                              UNCLASSIFIED

2/2   020   UNCLASSIFIED   PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AT0127313
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SYSTEM FOR THE CONTROL OF THE
  RADIOFREQUENCY BY USE OF THE BEAM IS BASED ON THE REGULATION OF THE
  FREQUENCY OF THE PILOT GENERATOR BY SIGNALS PROPORTIONAL TO THE RADIAL
  DISPLACEMENT OF THE BEAM WITH RESPECT OT THE NOMINAL ORBIT AND
  PROPORTIONAL TO THE DEPHASING OF THE CENTER OF GRAVITY OF THE BEAM WITH
  RESPECT TO THE ACCELERATOR FIELD. THE CONTROL SYSTEM IS DESCRIBED AND
  ITS OPERATIONAL EFFICIENCY IS DISCUSSED.   FACILITY: AKADEMIYA
  NAUK SSSR, MOSCOW. RADIOTEKHNICHESKII INSTITUT.

UNCLASSIFIED

USSR

UDC: 621.039.562.24

USYNIN, G. B., SHIBAYEV, V. A.,and CHIRKOV, V. A.

"Stabilization of Specific Heat Release in A Fast Reactor Using Control Rods"

Moscow, Atomnaya energiya, Vol 31, no 1, Jul 71, pp 3-6

Abstract: The efficiency of fuel elements in a fast reactor depends largely on their temperature. The maximum load is generally concentrated on the fuel element casing. The reduction of the latter's temperature while maintaining the mean coolant temperature constant is therefore of great significance. This can be accomplished by distributing the coolant consumption rate according to the heat release curve along the reactor's radius. In ideal hydraulic designs the individual cells are heated equally and the average heating over the reactor concurs with the maximum heating of the coolant. In practice, however, such situations never materialize. The responsible factors are detailed and mathematical treatment of this and other closely related problems is presented. It is

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USSR

USYNIN, G. B., et al, Atomnaya energiya, Vol 31, no 1, Jul 71, pp 3-6

believed that rearrangement of the compensator rods in closer proximity to
the periphery of the active zone at a given optimal radius will produce
a positive economic effect. (3 illustrations, 1 table, 3 biblio. references)

2/2

USSR

CHIRKOV, V. D., KUZOVLEV, V. V., and MANANNIKOV, A. S., Gorky Medical Institute imeni S. M. Kirov

"Impedance of the Cerebral Cortex in Relation to the Nonsynaptic Action of Biopotentials"

Moscow, Biofizika, No 1, 1970, pp 84-88

Abstract: Impedance was measured in intact and isolated portions of the cerebral cortex of adult cats at frequencies ranging from 50 to 1,500 Hz. Strychnine (1 percent solution) was applied to the normal cortex of six of the animals. The strychninized cortex, where epileptiform discharges occur, was found to have less impedance than in its normal state. The impedance of the isolated portion of cortex was higher than that of intact neocortex. Although the rapid cellular potentials provide better physical conditions for propagation through brain tissue, the slow summary waves can act over larger distances. The increased conductivity of the strychninized cortex is ascribed to the increase in ion permeability of the nerve cell membranes, whereas the decrease in conductivity of the isolated cortex seems to be due to reduction in the membrane charge. Thus, slow electrotonic waves may directly influence the function of nerve elements for a considerable distance, but the rapid potentials act on the neurons located very close to the point of origin.
1/1

1/2   019   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--IMPEDANCE OF THE CEREBRAL CORTEX IN RELATION TO THE NONSYNAPTIC
   ACTION OF BIOPOTENTIALS -U-
AUTHOR-(03)-CHIRKOV, V.O., KUZOVLEV, V.V., MANNANNIKOV, A.S.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, BIOFIZIKA, NO 1, 1970, PP 84-88

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CEREBRAL CORTEX, ELECTRIC IMPEDANCE, ALKALOID, NEURONE,
   BIOPOTENTIAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0848   STEP NO--UR/0217/70/000/001/0084/0088

CIRC ACCESSION NO--AP0121480
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0121480
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IMPEDANCE WAS MEASURED IN INTACT
  AND ISOLATED PORTIONS OF THE CEREBRAL CORTEX OF ADULT CATS AT
  FREQUENCIES RANGING FROM 50 TO 1,500 HZ. STRYCHNINE (1 PERCENT
  SOLUTION) WAS APPLIED TO THE NORMAL CORTEX OF SIX OF THE ANIMALS.   THE
  STRYCHNINIZED CORTEX, WHERE EPILEPTIFORM DISCHARGES OCCUR, WAS FOUND TO
  HAVE LESS IMPEDNACE THAN IN TIS NORMAL STATE. THE IMPEDANCE OF THE
  ISOLATED PORTION OF CORTEX WAS HIGHER THAN THAT OF INTACT NEOCORTEX.
  ALTHOUGH THE RAPID CELLULAR POTENTIALS PROVIDE BETTER PHYSICAL
  CONDITIONS FOR PROPAGATION THROUGH BRAIN TISSUE, THE SLOW SUMMARY WAVES
  CAN ACT OVER LARGER DISTANCES.   THE INCREASED CONDUCTIVITY OF THE
  STRYCHNINIZED CORTEX IS ASCRIBED TO THE INCREASE IN ION PERMEABILITY OF
  THE NERVE CELL MEMBRANES, WHEREAS THE DECREASE IN CONDUCTIVITY OF THE
  ISOLATED CORTEX SEEMS TO BE DUE TO REDUCTION IN THE MEMBRANE CHARGE.
  THUS, SLOW ELECTRONIC WAVES MAY DIRECTLY INFLUENCE THE FUNCTION OF NERVE
  ELEMENTS FOR A CONSIDERABLE DISTANCE, BUT THE RAPID POTENTIALS ACT ON
  THE NEURONS LOCATED VERY CLOSE TO THE POINT OF ORIGIN. IN.
  FACILITY: GORKY MEDICAL INSTITUTE IMENI S. M. KIROV.

UNCLASSIFIED

Acc. Nr: *AP0044102*

PRIMARY SOURCE: Neyrofiziologiya, 1970, Vol 2, Nr *1* , PP *59-63*

Ref. Code: *UR 0660*

THE ELECTRICAL ACTIVITY OF NEURONS IN CATS CORTEX UNDER ITS COOLING

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Summary

Experiments were made on 7 cats immobilized by procuran. Changes in cell activity were investigated in the posterior crucial and middle parts of suprasylvian and ectosylvian gyri under their cooling up to +18°. In acute experiments cooling up to 18°.8—21.8° leads to complete cessation of the neuronal activity. The dynamics of the change in the spike activity of neurons under cooling has a definite succession: a frequency increase (31°—28°), then a decrease in amplitude (23°—22°) and complete disappearance of activity (21.8°—18.8°). The cessation of cooling results in restoration of the cell

1/2

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activity in the reverse order: the appearance of low-amplitude high-frequency discharges (23°—26°), an amplitude increase of spikes (29°—31°) and the reduction of the initial activity (31°—32°). The drop in the neuronal activity depends on the rate of the temperature decrease in the cortex. The quicker is the cortex cooled, the lower temperature is needed for the cessation of the neuronal activity. Slow cooling leads to inactivation of the spike potentials at a higher temperature.

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